CLAIMS

1. An ink-jet ink, comprising:

a) an aqueous liquid vehicle having at least one volatile co-solvent, each volatile co-solvent present having a boiling point at or below about 285°C, wherein the total amount of volatile co-solvent present in the ink-jet ink is from 5 wt% to 50 wt%;

b) acid-functionalized polymer colloid particulates dispersed in the liquid vehicle; and

c) polymer-attached pigment colorants dispersed in the liquid vehicle.

2. An ink-jet ink as in as in claim 1, wherein the liquid vehicle includes no more than 10 wt% of non-volatile co-solvents.

3. An ink-jet ink as in as in claim 1, wherein the liquid vehicle includes no more than 2 wt% of non-volatile co-solvents.

4. An ink-jet ink as in as in claim 1, wherein the liquid vehicle is devoid of any non-volatile co-solvents.

5. An ink-jet ink as in as in claim 1, wherein the liquid vehicle further includes a member selected from the group consisting of C_5 to C_{22} aliphatic hydrocarbons, silicone, fluorocarbon surfactants, and combinations thereof.

6. An ink-jet ink as in as in claim 1, wherein the acid-functionalized polymer colloid particulates include surface acid groups, said surface acid groups provided by acid monomers copolymerized with other monomers to form the polymer colloid particulates, said acid monomers being present at from 1 wt% to 15 wt% of total monomers used to form the polymer colloid particulates.

7. An ink-jet ink as in as in claim 1, wherein the acid-functionalized polymer colloid particulates are provided by multiple monomers copolymerized

to form the polymer colloid particulates, said multiple monomers including at least one crosslinking monomer present at from 0.1 wt% to 3 wt% of total monomers used to form the polymer colloid particulates.

8. An ink-jet ink as in as in claim 1, wherein polymer-attached pigment is polymer-grafted pigment.

9. An ink-jet ink as in as in claim 1, wherein polymer-attached pigment is polymer-encapsulated pigment.

10. An ink-jet ink as in as in claim 1, wherein polymer-attached pigment includes a polymer covalently bound to a surface of a pigment.

11. An ink-jet ink as in as in claim 1, wherein the at least one volatile co-solvent is a humectant.

12. A system for printing images, comprising:

a) an ink-jet ink, including:

i) an aqueous liquid vehicle having at least one volatile co-solvent, each volatile co-solvent present having a boiling point at or below about 285°C, wherein the total amount of volatile co-solvent present in the ink-jet ink is from 5 wt% to 50 wt%,

ii) acid-functionalized polymer colloid particulates dispersed in the liquid vehicle, and

iii) polymer-attached pigment colorants dispersed in the liquid vehicle;

b) an ink-jet printhead configured for printing ink-jet ink; and

c) a non-porous substrate configured for receiving the ink-jet ink upon printing with the ink-jet printhead.

13. A system as in claim 12, wherein the liquid vehicle includes no more than 10 wt% of non-volatile co-solvents.

14. A system as in claim 12, wherein the liquid vehicle includes no more than 2 wt% of non-volatile co-solvents.

15. A system as in claim 12, wherein the liquid vehicle is devoid of any non-volatile co-solvents.

16. A system as in claim 12, wherein the liquid vehicle further includes a member selected from the group consisting of C_1 to C_8 aliphatic hydrocarbons, silicone, fluorocarbon surfactants, and combinations thereof.

17. A system as in claim 12, wherein the acid-functionalized polymer colloid particulates include surface acid groups, said surface acid groups provided by acid monomers copolymerized with other monomers to form the polymer colloid particulates, said acid monomers being present at from 1 wt% to 15 wt% of total monomers used to form the polymer colloid particulates.

18. A system as in claim 12, wherein the acid-functionalized polymer colloid particulates are provided by multiple monomers copolymerized to form the polymer colloid particulates, said multiple monomers including at least one crosslinking monomer present at from 0.1 wt% to 3 wt% of total monomers used to form the polymer colloid particulates.

19. A system as in claim 12, wherein polymer-attached pigment is polymer-grafted pigment.

20. A system as in claim 12, wherein polymer-attached pigment is polymer-encapsulated pigment.

21. A system as in claim 12, wherein polymer-attached pigment includes a polymer covalently bound to a surface of a pigment.

22. A system as in claim 12, wherein the ink-jet printhead is a thermal ink-jet printhead.

23. A system as in claim 12, wherein the non-porous substrate is selected from the group consisting of plastic sheets, plastic films, coated papers, glass, and metal.

24. A system as in claim 12, further comprising a heating element configured for heating the image once it is printed on the non-porous substrate.

25. A system as in claim 12, wherein the at least one volatile co-solvent is a humectant.

26. A method of printing an image with good rub resistance, comprising ink-jetting an ink-jet ink onto a non-porous substrate to form the image, said ink-jet ink including:

a) an aqueous liquid vehicle having at least one volatile co-solvent, each volatile co-solvent present having a boiling point at or below about 285°C, wherein the total amount of volatile co-solvent present in the ink-jet ink is from 5 wt% to 50 wt%;

b) acid-functionalized polymer colloid particulates dispersed in the liquid vehicle; and

c) polymer-attached pigment colorants dispersed in the liquid vehicle.

27. A method as in claim 26, wherein the liquid vehicle includes no more than 10 wt% of non-volatile co-solvents.

28. A method as in claim 26, wherein the liquid vehicle includes no more than 2 wt% of non-volatile co-solvents.

29. A method as in claim 26, wherein the liquid vehicle is devoid of any non-volatile co-solvents.

30. A method as in claim 26, wherein the liquid vehicle further includes a member selected from the group consisting of hydrocarbon surfactants, silicone surfactants, fluorocarbon surfactants, and combinations thereof.

31. A method as in claim 26, wherein the acid-functionalized polymer colloid particulates include surface acid groups, said surface acid groups provided by acid monomers copolymerized with other monomers to form the polymer colloid particulates, said acid monomers being present at from 1 wt% to 15 wt% of total monomers used to form the polymer colloid particulates.

32. A method as in claim 26, wherein the acid-functionalized polymer colloid particulates are provided by multiple monomers copolymerized to form the polymer colloid particulates, said multiple monomers including at least one crosslinking monomer present at from 0.1 wt% to 3 wt% of total monomers used to form the polymer colloid particulates.

33. A method as in claim 26, wherein polymer-attached pigment is polymer-grafted pigment.

34. A method as in claim 26, wherein polymer-attached pigment is polymer-encapsulated pigment.

35. A method as in claim 26, wherein polymer-attached pigment includes a polymer covalently bound to a surface of a pigment.

36. A method as in claim 26, wherein the ink-jet printhead is a thermal ink-jet printhead.

37. A method as in claim 26, wherein the non-porous substrate is selected from the group consisting of plastic sheets, plastic films, coated papers, glass, and metal.

38. A method as in claim 26, further comprising a step of heating the image once it is printed on the non-porous substrate.

39. A method as in claim 38, wherein the heating step is carried out at a temperature effective to drive off enough of the volatile co-solvent to improve the image permanence.

40. A method as in claim 26, wherein the at least one volatile co-solvent is a humectant.